

CLAIMS

What is claimed is:

- 1 1. A magnetic head having an air bearing surface, comprising:
2 a magnetoresistive sensor;
3 a magnetic, electrically conductive shield having a surface defining a plane and having
4 first and second lateral sides, formed in proximity to and electrically insulated
5 from said sensor;
6 first and second electrically conductive layers extending from said first and second sides
7 of said shield, said first and second conductive layers being coplanar with and
8 electrically insulated from said shield;
9 a first electrical lead connected with said first electrically conductive layer; and
10 a second electrical lead connected with said second electrically conductive layer.
- 1 2. A magnetic head as recited in claim 1 wherein said at least one of said first and
2 second electrical circuits is electrically connected with said sensor.
- 1 3. A magnetic head as recited in claim 1 wherein said first and second electrically
2 conductive layers comprise the same material as said shield.
- 1 4. A magnetic head as recited in claim 1 further comprising first and second
2 electrically insulating gaps formed at said first and second sides of said shield,
3 said gaps electrically isolating said first and second electrically conductive layers
4 from said shield.
- 1 5. A magnetic head as recited in claim 1 wherein said sensor has a surface defining a
2 second plane and wherein said shield and said sensor are parallel and non-
3 coplanar.
- 1 6. A magnetic head, comprising:
2 a magnetoresistive sensor;

3 a shield layer formed in proximity to said sensor, said shield comprising a soft
4 magnetic, electrically conductive material;
5 a layer of electrically conductive material adjacent to said shield;
6 a dielectric material disposed between said shield and said electrically conductive
7 material layer and electrically isolating said shield therefrom;
8 a first electrically conductive lead in electrical communication with said layer of
9 electrically conductive material; and
10 a second lead in electrical communication with said shield.

1 7. A magnetic head as in claim 6, wherein said electrically conductive layer is
2 coplanar with said shield.

1 8. A magnetic head as in claim 6, wherein said electrically conductive layer is
2 coplanar with said shield and comprises the same material as said shield.

1 9. A magnetic head as in claim 6, wherein said electrically conductive layer is
2 formed in a common manufacturing step with said shield.

1 10. A magnetic head as in claim 6, wherein said shield is disposed above said sensor.

1 11. A magnetic head as in claim 6, wherein said shield is disposed below said sensor.

1 12. A method of manufacturing a magnetic head, comprising:
2 forming a layer of magnetic, electrically conductive material;
3 forming first and second electrically insulating gaps in said magnetic, electrically
4 conductive material layer said first and second gaps terminating substantially at a
5 predetermined lap stop location, said first and second gaps defining a central
6 portion and first and second laterally opposed outer portions of said magnetic,
7 electrically conductive layer;
8 forming a magnetoresistive sensor;

9 forming a first electrically conductive lead connected with said first outer portion of said
10 magnetic, electrically conductive layer;
11 forming a second electrically conductive lead connected with said second outer portion of
12 said magnetic, electrically conductive layer; and
13 performing a lapping operation until at least one of said first and second gaps is reached.

1 13. A method as recited in claim 12 further comprising measuring an electrical
2 resistance between said first and second leads until an increase in said resistance
3 indicates that said lap stop location has been reached.

1 14. A method as recited in claim 12 wherein a portion of said magnetic, electrically
2 conductive material extending beyond said lap stop location is contiguous.

1 15. A method as recited in claim 12 wherein said magnetic, electrically insulating
2 material is formed before the formation of said sensor so as to be formed below
3 said sensor.

1 6. A method as recited in claim 12 wherein said magnetic, electrically insulating
2 material is formed after the formation of said sensor so as to be formed above said
3 sensor.

1 17. A method for constructing a magnetic head, comprising
2 forming a magnetoresistive sensor;
3 forming a layer of magnetic, electrically conductive material having proximal and
4 distal ends, and first and second lateral side portions;
5 providing a gap in said layer of magnetic, electrically conductive material, said
6 gap terminating short of said proximal end and extending through said distal end;
7 performing a lapping operation, said lapping operation initiating from said
8 proximal end and proceeding toward said distal end;

1 measuring an electrical resistance between across said magnetic, electrically
2 conductive layer from said first lateral side portion to said second lateral side
3 portion;
4 ceasing lapping when said electrical resistance reaches a predetermined value.

1 18. A method as in claim 17 wherein said layer of magnetoresistive sensor is formed
2 before the formation of said magnetic, electrically conductive layer.

1 19. A method as in claim 17, wherein said layer of magnetoresistive sensor is formed
2 after the formation of said magnetic, electrically conductive layer.

1 20. A method as in claim 17, further comprising depositing a dielectric layer between
2 said sensor and said magnetic electrically conductive material layer.

1 21. A magnetic recording system, comprising:
2 a housing;
3 a motor connected with said housing;
4 a spindle connected with said motor;
5 a magnetic disk mounted on said spindle for rotation about its own axis;
6 an actuator supported within said housing;
7 a slider supported by said actuator for movement across a surface of said disk;
8 a magnetic head formed on said slider, said magnetic head further comprising:
9 a magnetoresistive sensor;
10 a shield layer formed in proximity to said sensor, said shield comprising a
11 soft magnetic, electrically conductive material;
12 a layer of electrically conductive material adjacent to said shield;
13 a dielectric material disposed between said shield and said electrically
14 conductive material layer and electrically isolating said shield
15 therefrom;
16 a first electrically conductive lead in electrical communication with said
17 layer of electrically conductive material; and

18 a second lead in electrical communication with said shield.

- 1 22. A magnetic head, comprising:
2 a magnetic, electrically conductive shield;
3 a sensor formed above and electrically isolated from said shield;
4 first and second lap guides, electrically connected with said shield.
- 1 23. A magnetic head as in claim 22, wherein said first and second lap guides are
2 coplanar with said sensor.
- 1 24. A magnetic head as in claim 22 wherein said first and second lap guides are
2 comprise the same materials as said sensor.
- 1 25. A magnetic head as in claim 22 wherein said first and second lap guides are
2 constructed in a common manufacturing step with said sensor.
- 1 26. A magnetic head as in claim 22 further comprising first and second vias,
2 electrically connected said first and second lapping guides with said shield.
- 1 27. A magnetic head as in claim 22 further comprising first and second electrically
2 conductive leads in electrical communication with said first and second lap
3 guides.